Lecture 11(i)

- Midterm results posted next week
- Sections this week will go over worksheet at Canvas on monopoly.
- HW 9 due next week.
- No recitation sections next week because of Thanksgiving.

Lecture

1. Marginal Revenue of a Monopolist

2. Profit-Maximizing Monopoly

3. Inefficiency of Monopoly

Monopolist and Competitive Firm

How are they similar?
- Both try to maximize
  profit = revenue - costs
- So both set quantity where
  marginal rev. = marginal cost
  (MR = MC)

How different?

- When competitive firm sells more
  unit, price stays the same
  - Marginal Revenue = Price
  - Same as saying price taker
- When monopoly firm sells more
  price falls
  - Marginal Revenue < Price

Lemonade Stand

Suppose can sell
- 1 at P = $1.00
- 2 at P = 50¢

Sell second one, cash register rings
up 50¢. Is this MR?

No!!!!
   Sell one: Revenue = $1.00
   Sell two: Revenue = .50 +.50
   = $1
So marginal revenue = 0!

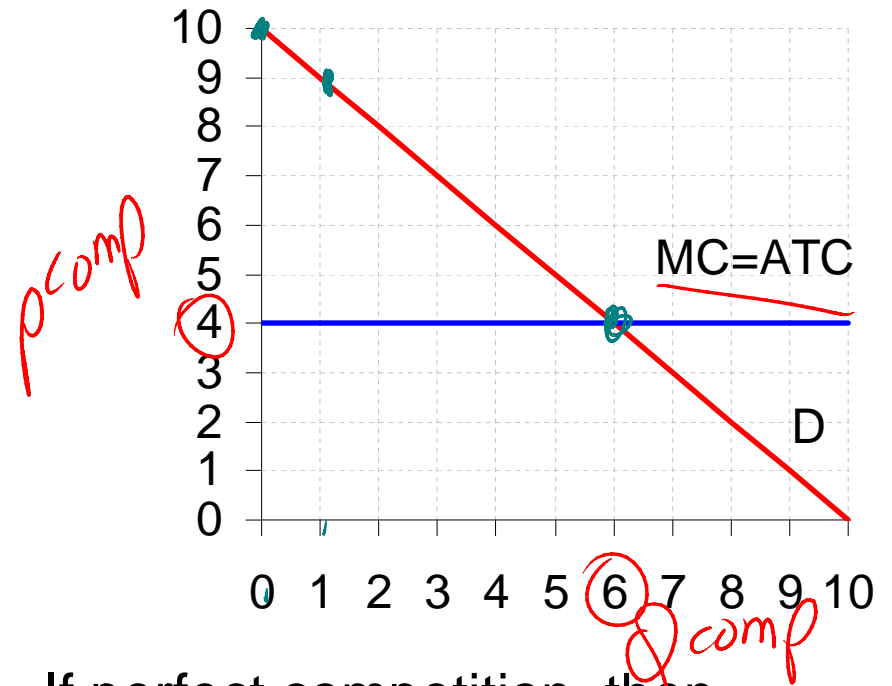(Note: this is uniform price monopoly.
Things are different if can price
discriminate)

Widget Monopoly in Econland

S1-S3 and S5-S10 deceased.

S4 has monopoly.

One change: now she can produce as many widgets as she wants at ATC = 4. (So MC = 4 too)

If perfect competition, then
- P = 4
- Note P = MC
- Q = 6

But with monopoly, need to do something different.

Let's figure out Marginal Revenue

Marginal Revenue of S4

Q	P	Revenue	MR
0	10		
1	9		
2	8		
3	7		
4	6		
5	5		
6	4		
7	3		
8	2		
9	1		

(handwritten annotations in the Revenue and MR columns):
Revenue: 0, 9, 16, 21, 24, 25, 24, 21, 16, 9
MR: 9, 7, 5, 3, 1, -1, -3, -5, -7
27-16

Revenue = P*Q.

At Q =2 and P=8, Revenue = 16

If raise Q to 3, then P falls to 7, and

Revenue = 3*7=21. The change in

revenue (MR) = 21 - 16 = 5. Plot

this on graph at Q=2.5 (halfway

between 2 and 3).

Revenue is maximized
at point where MR=0.
This is Q = 5 and P=5.

D

+ Q = 7

MR
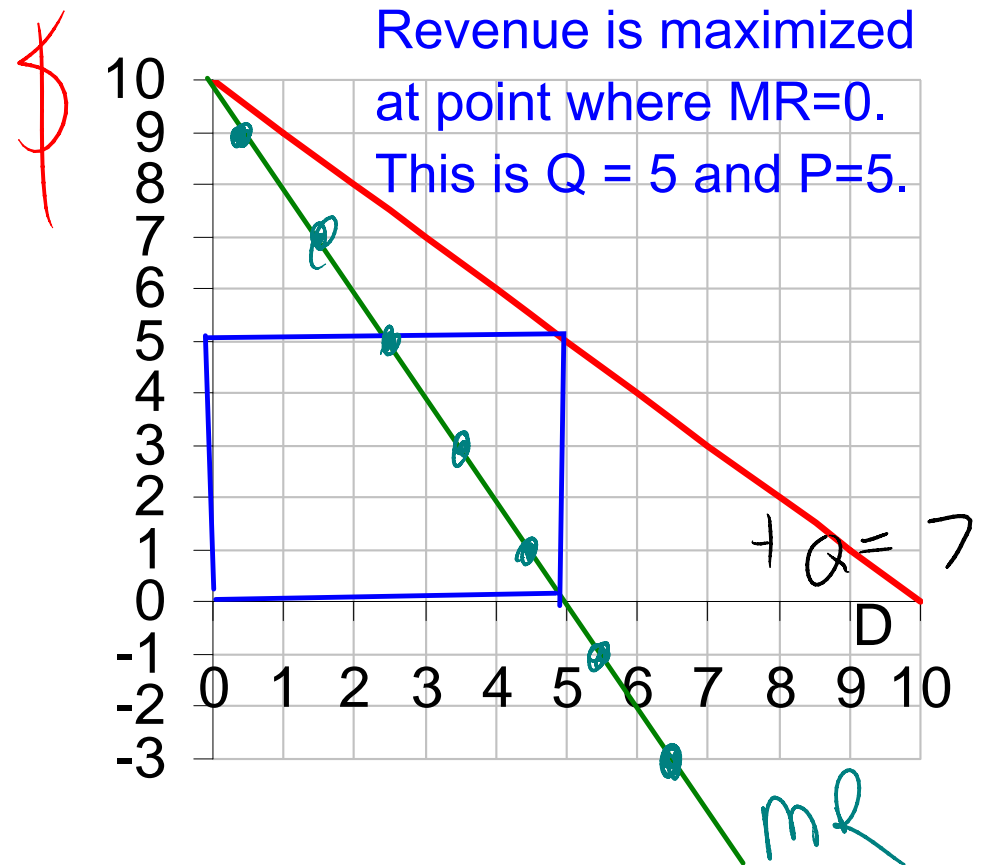
Rules for MR of linear demand
- vertical intercept same as
  demand
- horizontal intercept is halfway

Picture is all you need for this class. But if you like an equation…

$Rev = P{\times}Q$

$\quad = (10-Q){\times}Q$

$\quad = 10Q - Q^2$

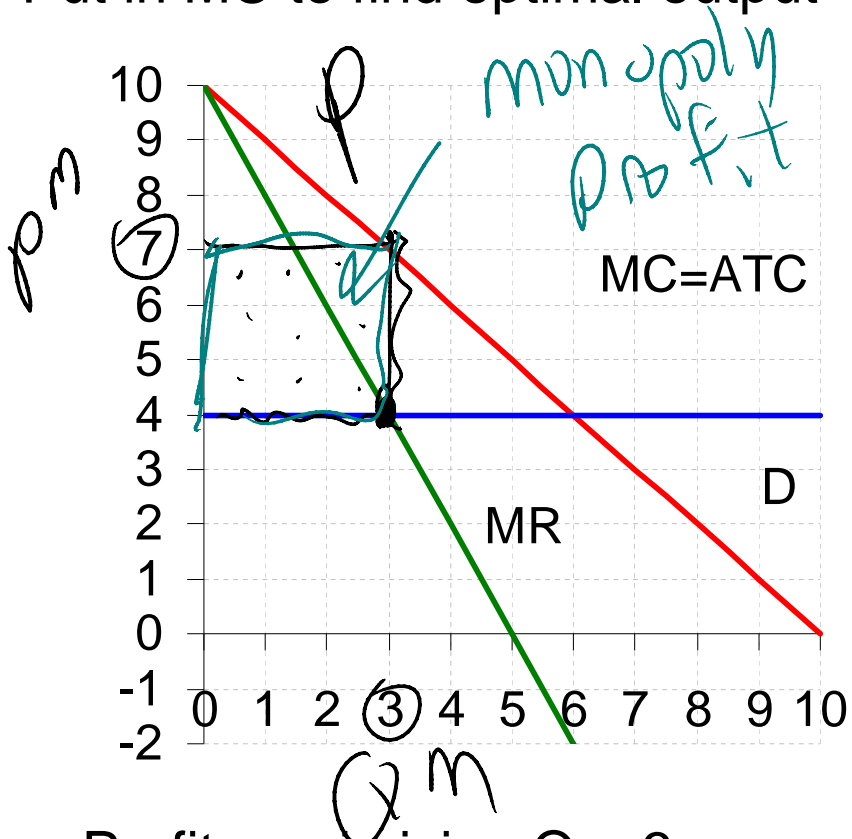Marginal Revenue is slope

$MR = 10 - 2Q$

What if demand looked like this?

Again, MR has same vertical MR intercept as demand, and horizontal intercept is half of demand.

So let's go back to S4's problem and figure out what she should do.
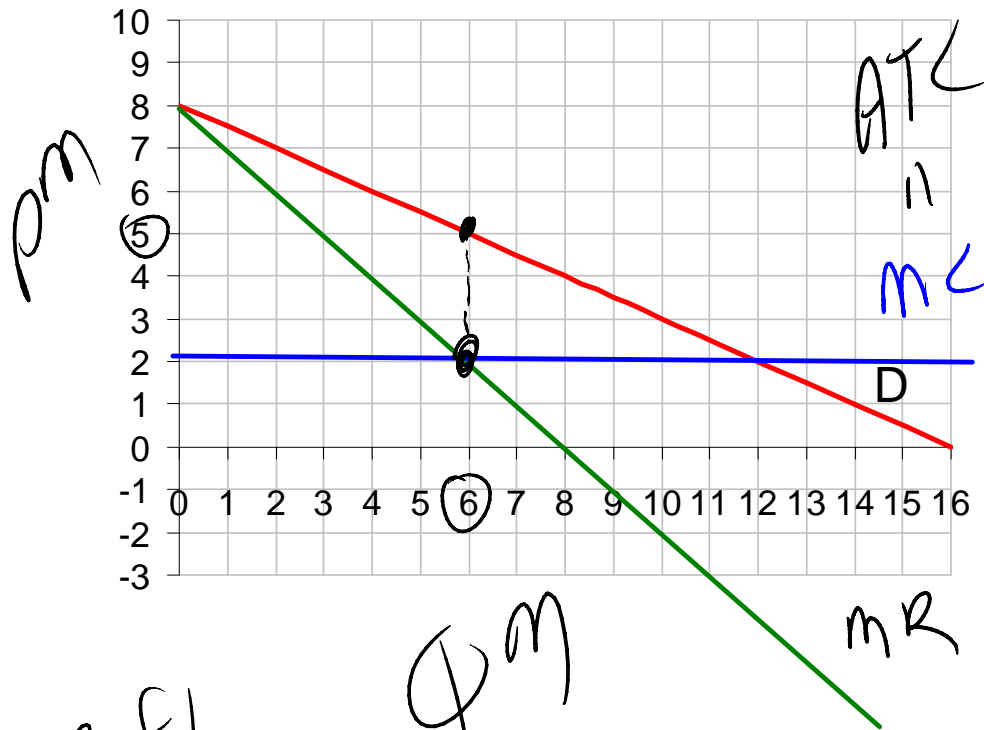
Put in MC to find optimal output

- Profit maximizing Q = 3
- Price that goes with this is $P^M = \$7$
- Profit = [P − ATC] = [7 − 4]*3 = 9
- See it on graph

$3 * 3 = 9$

Check that this is profit maximizing:

Q	P	Rev	Cost	Profit
1	9	9	4	5
2	8	16	8	8
3	7	21	12	9
4	6	24	16	8
5	5	25	20	5

What if demand looked like this and
MC = 2? Figure out the monopoly
price and quantity.

P^m

ATC
''
MC

D

Q^m

MR

Profit
$= (5-2) \times 6 = 18$

Inefficiency of Monopoly

CS with monopoly

PS with monopoly

P comp

P m

MC=ATC

D

MR

Q m   Q comp
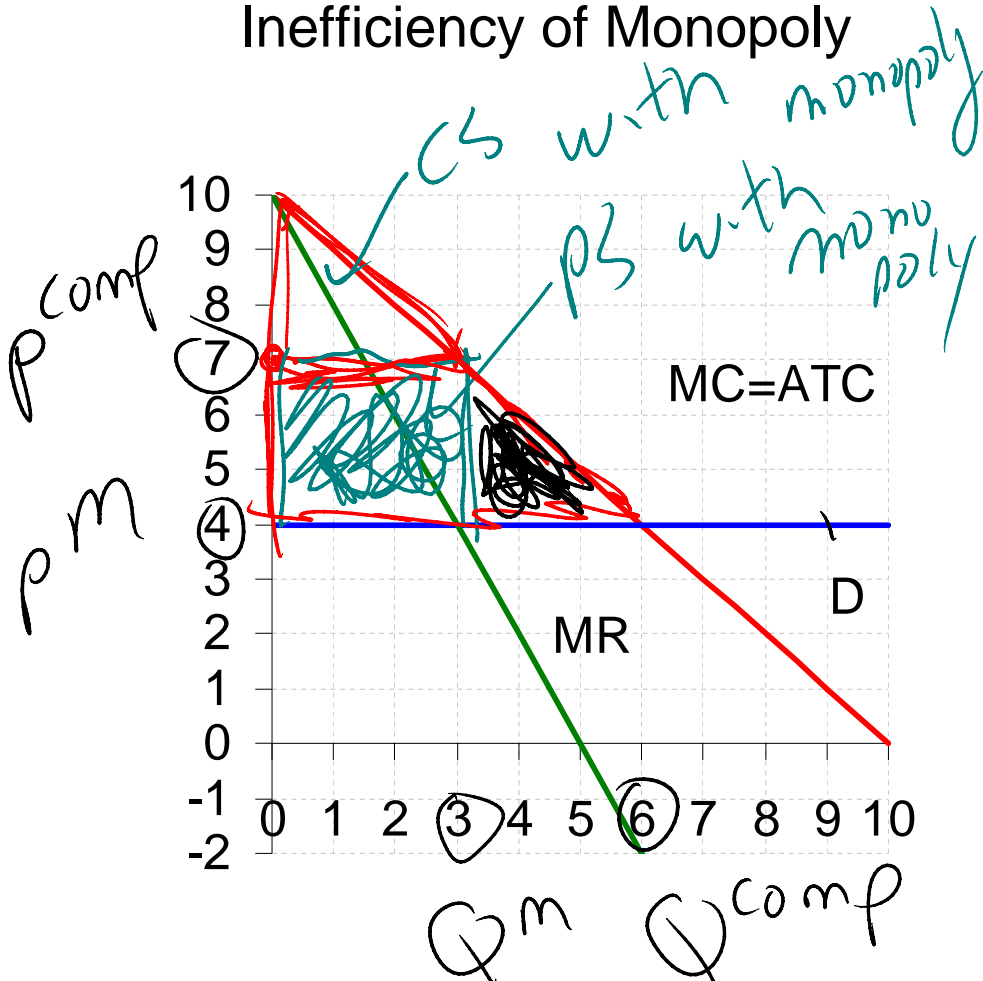
Just like a $3 tax,
But monopolist gets tax revenue!

Perfect

	Comp.	Monopoly	Change
Q	6	3	-3
P	4	7	+3
CS	$\frac{6\times6}{2}=$ 18	$\frac{3\times3}{2}=$ 4.5	-13.5
PS	0	9	9
TS	18	13.5	-4.5

DCS (minus)

1. Monopoly results in a loss of CS of 13.5 from the higher price.

2. Part is a transfer from consumers to the firm. Called a monopoly rent

3. Part of consumer loss is deadweight loss of -4.5.
Too little output (condition 3 violation).

First Welfare Theorem does not hold when we have monopoly.

4. Can have additional social costs:
Monopoly Rent Seeking Behavior
Efforts to secure a monopoly

Example in Econland. Suppose give monopoly to first person in line. Suppose time costs $1 hour. In equilibrium one person gets in line for 9 hours. All the monopoly rent is dissipated

In real world:

- Use of resources like the legal and patent system to keep out rivals.
  o Time spent on lawyers is social waste (opportunity cost)

- Entry of too many real estate agents.
  o Try to get the monopoly rent of too high a commission. But may end up selling only a few houses a year.
  o Wait. Where is the monopoly? Control of Multiple Listing Service (MLS)